Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A lithographic apparatus comprising:

an illumination system for supplying a projection beam of radiation;

an array of individually controllable elements serving to impart the projection beam with a pattern in its cross-section, groups of the individually controllable elements producing respective portions of the patterned beam;

a substrate table for supporting a substrate; and

a projection system for projecting the patterned beam onto a target portion of the substrate,

wherein the projection system includes an array of focusing elements, arranged such that each focusing element directs one of the respective portions of the patterned beam from one of the groups of the individually controllable elements to thereby expose an area of the substrate; and

wherein each of the individually controllable elements can be set to at least two states in which the corresponding portion of the patterned beam provides radiation at an intensity between the at least two states.

Claims 2-3. (cancelled)

4. (Currently Amended) An apparatus according to claim 1 ~~2~~, wherein at least one individually controllable element can be set such that in each of its states it passes a different proportion of the radiation incident on the individually controllable

element to the associated focusing element than at least one other individually controllable element that is associated with the same focusing element in anyone of its states.

5. (Original) An apparatus according to claim 1, further comprising at least one attenuator for reducing the intensity of the radiation incident on one of the individually controllable elements relative to another individually controllable element associated with the same focusing element.

6. (Original) An apparatus according claim 1, further comprising at least one attenuator for attenuating the radiation from one of the individually controllable elements such that a portion of the radiation propagating from the individually controllable element that reaches the associated focusing element is less than a further portion of the radiation propagating from at least one other individually controllable element that reaches said focusing element.

7. (Original) An apparatus according to claim 1, further comprising:

an actuator for moving the substrate relative to the projection system at a substantially constant velocity while a predetermined portion of the substrate is exposed; and

a controller for providing control signals to set the individually controllable elements, wherein the controller is arranged to change the settings of the individually controllable elements while a point on the substrate is within the area illuminated by one focusing element such that the intensity of the radiation received at said point is changed.

8. (Original) An apparatus according to claim 1, further comprising:

an actuator for moving the substrate relative to the projection system at a substantially constant velocity whilst a predetermined portion of the substrate is exposed such that a given point on the substrate passes within a plurality of areas illuminated by different focusing elements; and

a controller for providing control signals to set the individually controllable elements, wherein the controller is arranged to be able to provide the required settings to the individually controllable elements such that the intensity of the radiation in the plurality areas illuminated by the focusing elements are such that the point on the substrate, that passes through the areas, receives a desired total dose of radiation during said exposure.

9. (Currently Amended) A device manufacturing method comprising the steps of:

providing a projection beam of radiation using an illumination system;

using an array of individually controllable elements to impart the projection beam with a pattern in its cross-section, groups of the individually controllable elements producing respective portions of the patterned beam; and

using an array of focusing elements as part of a projection system to project the patterned beam onto a target portion of the substrate, wherein each of the focusing elements is arranged to direct one of the respective portions of the patterned beam from one of the groups of the individually controllable elements onto an area within the target portion, and wherein the individually controllable elements are set to a plurality of different states, wherein an ~~in each of which a different~~ intensity of radiation of each of the states is different from ~~propagates from the individually controllable element to the associated focusing element; and~~

~~setting each of the individually controllable elements to produce~~ a desired intensity of radiation at said areas on the substrate.

10. (Original) A device manufacturing method according to claim 9, wherein each of the individually controllable elements can be set to at least three states.

11. (Original) An device manufacturing method according to claim 9, the method further comprising moving the substrate relative to the projection system at a substantially constant velocity whilst a predetermined portion of the substrate is exposed and changing the settings of the individually controllable elements whilst a given point on the substrate is within the area illuminated by one focusing element.

12. (Original) A device manufacturing method according to claim 9, the method further comprising moving the substrate relative to the projection system at a substantially constant velocity whilst a predetermined portion of the substrate is exposed and applying the requisite settings to the individually controllable elements such that the intensity of the radiation in the areas illuminated by a plurality of focusing elements is such that a point on the substrate that passes through the areas receives a desired total dose of radiation.

13. (Currently Amended) An apparatus comprising:

(i) a radiation source for providing a projection beam of radiation;

(ii) an array of individually controllable elements to receive and pattern said projection beam of radiation; and

(iii) an array of focusing elements, said array of focusing elements comprising at least two focus elements, wherein each of said focus elements is optically associated with a separate group of said individually controllable elements;

wherein each of the individually controllable elements can be set to at least two states in which a corresponding portion of the patterned projection beam provides radiation at an intensity between the at least two states.

14. (Previously Presented) The apparatus of claim 13, wherein said array of focusing elements comprises more than two focus elements.

15. (Previously Presented) The apparatus of claim 13, wherein said plurality of said individually controllable elements is arranged in a square configuration.

16. (Previously Presented) The apparatus of claim 13, wherein said radiation source is arranged to illuminate said array of individually controllable elements with oblique radiation.

17. (Previously Presented) The apparatus of claim 13, wherein said array of individually controllable elements is a programmable mirror array.

18. (Previously Presented) The apparatus of claim 13, wherein said apparatus is a lithography apparatus.

19. (Currently Amended) A method, comprising:

(i) providing a projection beam of radiation using a radiation source;

(ii) receiving and patterning said projection beam of radiation with an array of individually controllable elements;

(iii) focusing the patterned projection beam with an array of focusing elements, said array of focusing elements comprising at least two focus elements, wherein each of said focus elements is optically associated with a separate group of said individually controllable elements, and wherein each of the individually controllable elements within each group can be set to at least two states in which a corresponding portion of the patterned projection beam provides radiation at an intensity between the at least two states; and

(iv) exposing a substrate to radiation by each of the separate groups of individually controllable elements.

20. (Previously Presented) A flat panel display obtained with the method of claim 19.